National Weather Service Milwaukee

Severe Weather Safety Class 2017

#skywarn17

Video: Tempest Tours

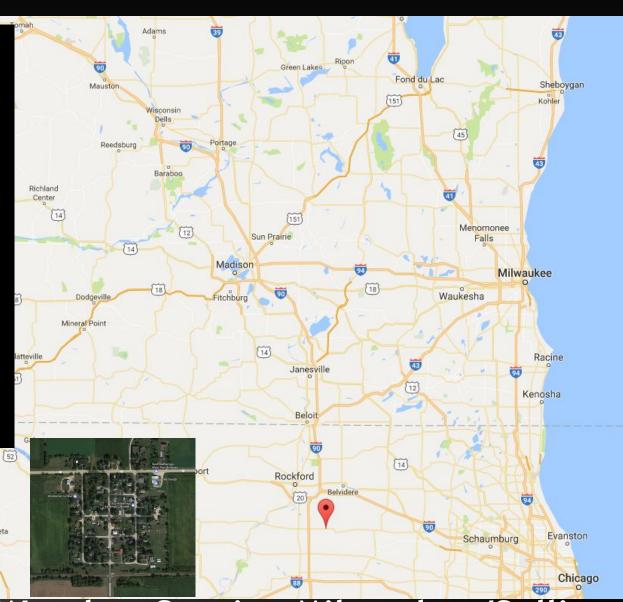




April 9th, 2015 Fairdale, IL

EF-4 Tornado

Video by Clem Schultz







National Weather Service Milwaukee/Sullivan













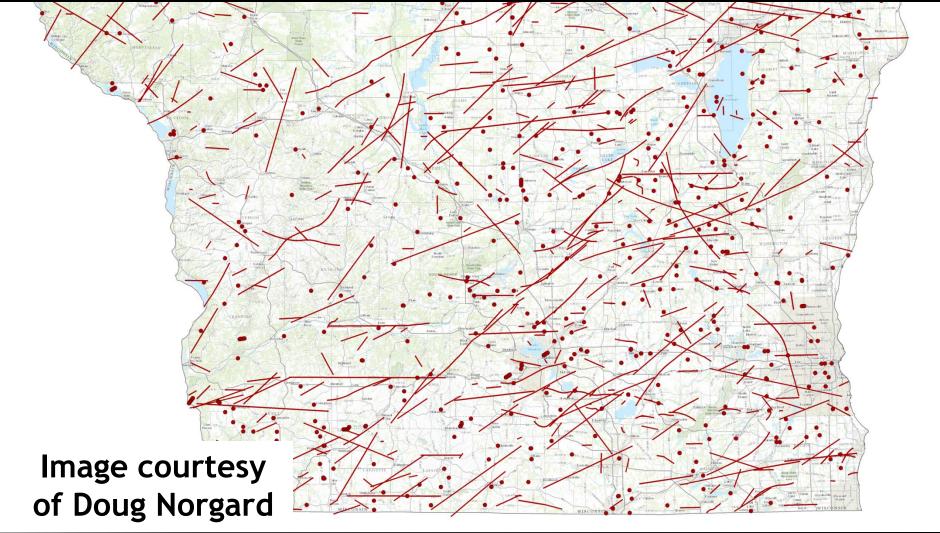






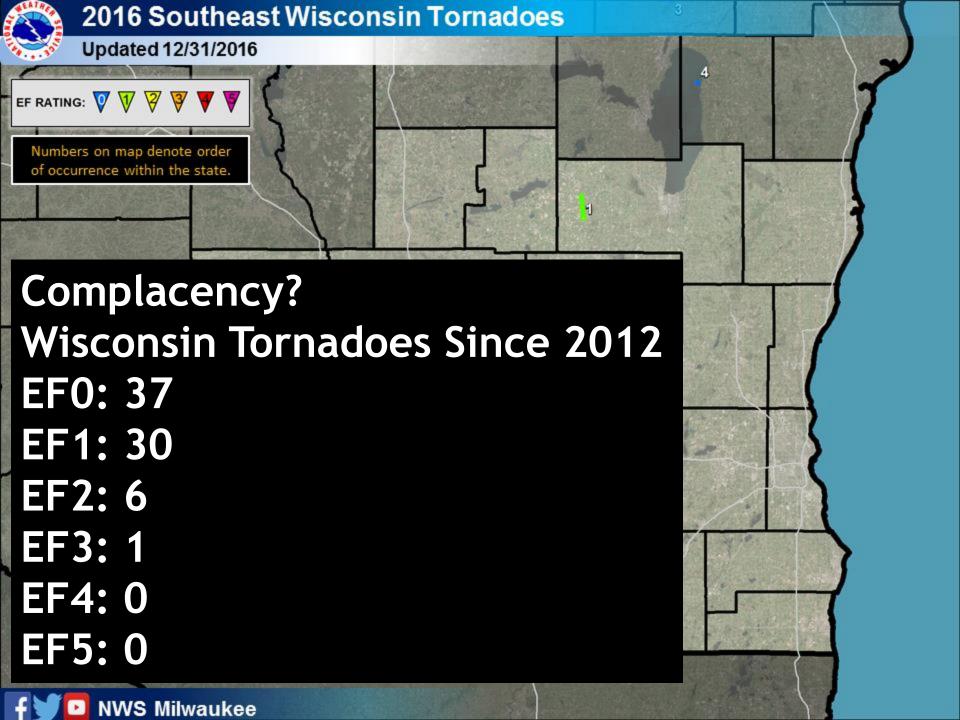
Severe weather occurs in WI

Tornado Paths: 1950-2015

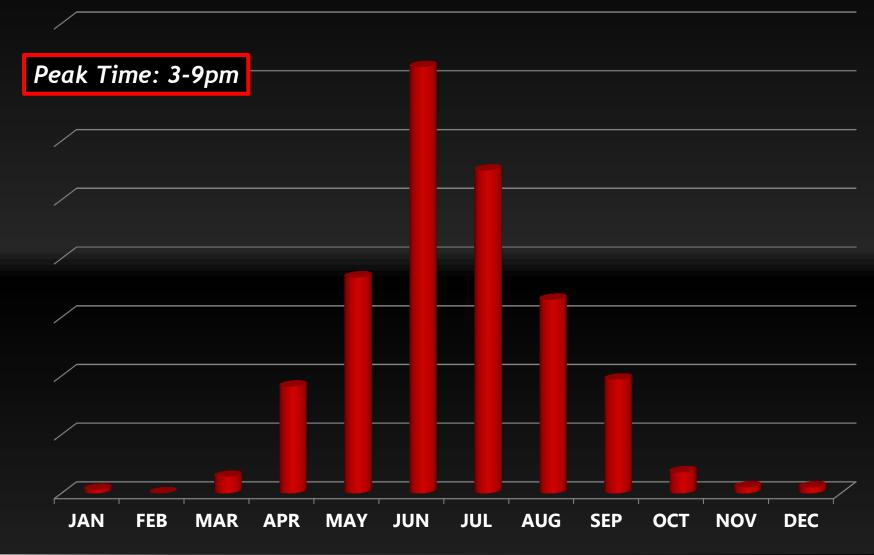








Wisconsin Tornadoes by Month







It isn't a matter of if, but when.







Tornado Safety

Step 1: Create a plan

Step 2: Prep a supply kit

Step 3: Stay Informed

95% of WI Tornadoes are EFO, 1, or 2

EF 0 • Up to 85 mph

EF 1 • 86-110 mph

EF 2 • 111-135 mph

EF 3 • 136-165 mph

EF 4 • 166-200 mph

EF 5 • Over 200 mph







Step 1: Create a plan

- Put together a family emergency plan.
- -Discuss how to get to a safe place.
- -How to communicate with each other. Text, don't call.
- -Where to meet up after the event is over.
- -Pick an out of state family member or friend to act as the family contact.



Where is a safe place?

- -Away from windows.
- -Lowest level of a sturdy building.



TORNADO WARNING





Higher Risk for Injury/Death-Tornado

- Being outside
- Being in your vehicle
- In a manufactured home
- In a shed or storage facility



Last Tornado Fatality in Wisconsin?

August 19, 2011 Wausaukee EF1 Occupant in mobile home





No basement?

- -Go to the center of the building.
- -Put as many walls between you and the outside of the building.







Get under a table

- -Cover yourself with pillows/blankets.
- -Use arms to cover your head and neck.





In Your Car?

BEST: Drive to a shelter immediately. Worst case scenario: Two Options

Option 1: Stay in Car

Lean Down/Cover Head

PRO: May not get hit by debris

CON: Car can be tumbled/lofted

Option 2: Get out of car

Get in ditch/low spot

PRO: Car is easier to loft/tumble

CON: Possibly exposed to debris









What not to do!

Do NOT park underneath an overpass.
-Blocks traffic. Acts as a wind tunnel.





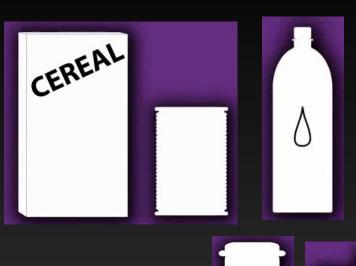
What not to do!







Step 2: Prep a supply kit

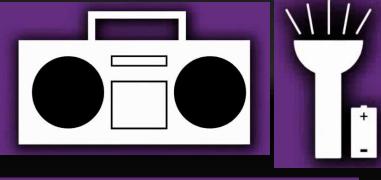


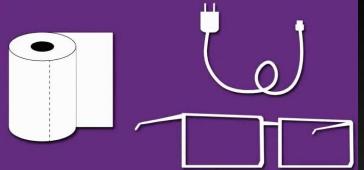
Tornado Watch at Night?

- -Charge Cell Phone
- -Plug in Weather Radio
- -Keep Shoes/Boots by bed





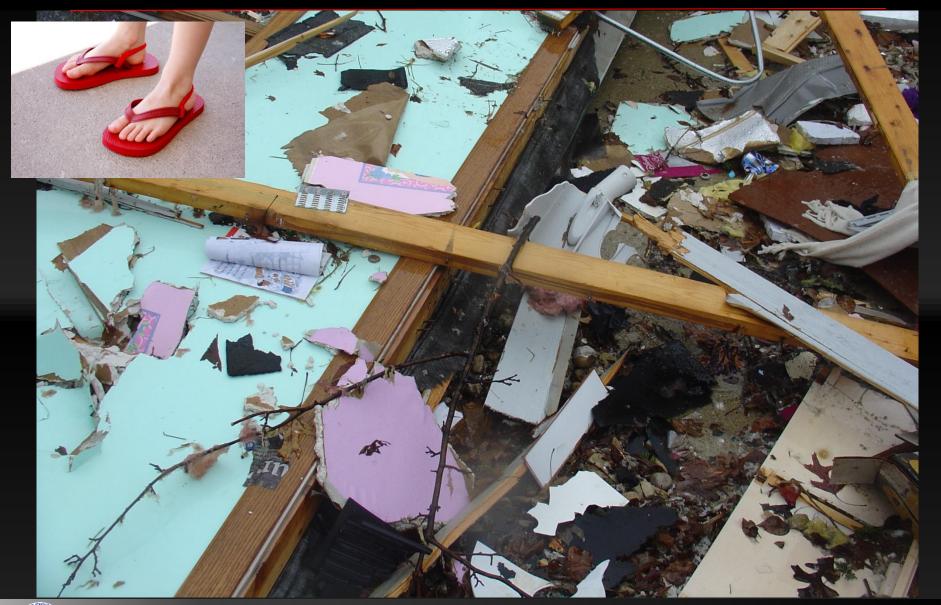








What not to do!







Step 3: Stay Informed

How do you know if storms are going to occur? Where can you get information from?

-Have a good source (NWS, Media, Private)

-Use Technology (Internet, mobile, radio, tv)

-Watch for updates,



weather.gov/milwaukee



innovation.srh.noaa. gov/NWSwidget











National Weather Service Milwaukee

- 24 Hour Operations
- 23 Dedicated Staff Members
- Severe Weather Warnings
- Public Forecasts
- Aviation Forecasts
- Marine Forecasts
- Hydrology
- Fire Weather Forecasts





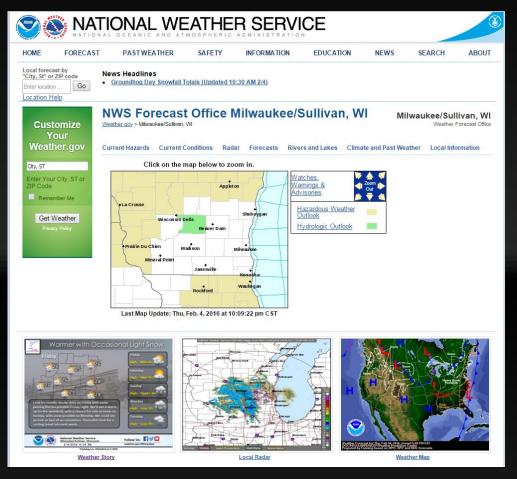








weather.gov/milwaukee



- Watches/Warnings
- Hazardous Weather Outlooks
- Weather Story
- Top News
- Radar Imagery
- River Levels/Flooding
- Much more!



/NWSMilwaukee



@NWSMKX

weather.gov/subscribe (ALERT Options)

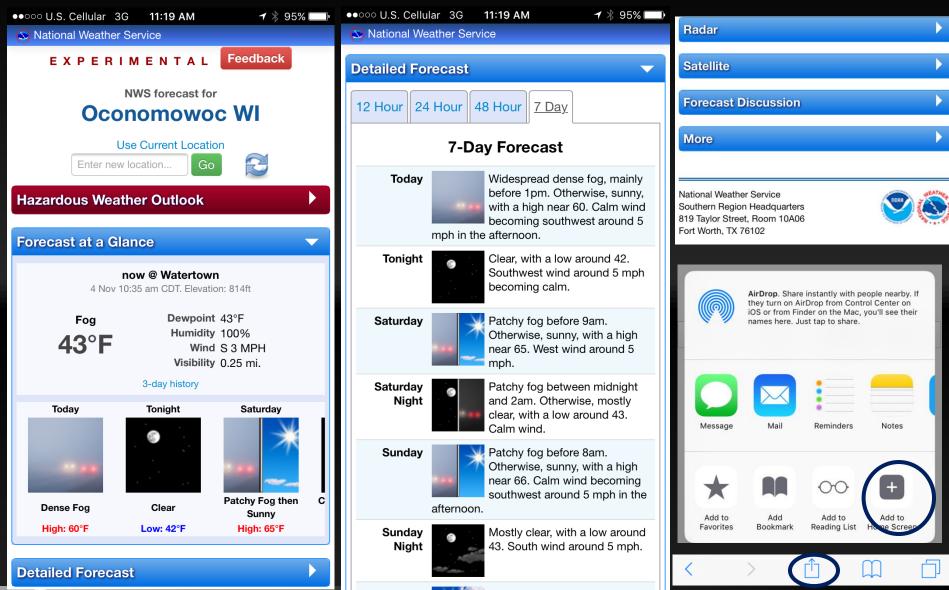


/NWSMilwaukee





innovation.srh.noaa.gov/NWSwidget





Severe Weather Forecasts

Outlooks (Forecasts):





Warnings:

- Any potential hazards over the next week.
- Hazardous Weather Outlook: Milwaukee NWS
- Convective Outlook: Storm Prediction Center

- Conditions are forecast to occur within the next 2-6 hours.
- Severe
 Thunderstorm,
 Tornado.
- Flash Flood Watches issued further in advance.

- Conditions are occurring now!
- Severe: >58mph
 winds, Hail larger than
 quarters (>1")
- Tornado: Radar indicated or reported by person.
- Flash Flood: Rapid rise of creeks/streams.





Thunderstorm Risk Categories via SPC

THUNDERSTORMS 1 - MARGINAL 2 - SLIGHT 3 - ENHANCED 4 - MODERATE 5 - HIGH (no label) (MRGL) (SLGT) (ENH) (MDT) (HIGH) Widespread Scattered **Numerous** Widespread Isolated severe No severe* severe storms severe storms severe storms severe storms thunderstorms thunderstorms possible likely expected possible possible expected Limited in duration Long-lived, very Lightning/flooding Short-lived and/or More persistent Long-lived. and/or widespread, widespread and threats exist with and/or coverage not widespread, widespread and isolated intense particularly intense all thunderstorms and/or intensity a few intense intense storms possible One or two tornadoes A few tornadoes · Winds 40-60 mph Strong tornadoes Tornado outbreak Winds to 40 mph Reports of strong · Several reports of Widespread wind Derecho • Hail up to 1" · Small hail winds/wind damage wind damage damage Low tornado risk Hail ~1", isolated 2" Damaging hail, 1 - 2" • Destructive hail, 2"+





Hazardous Weather Outlook

via NWS Milwaukee

- Provides "heads up" to spotters.
- Issued daily
 - Around 4-6am.
 - Updated, as needed, through the day.
- 7-day outlook.

HAZARDOUS WEATHER OUTLOOK NATIONAL WEATHER SERVICE MILWAUKEE/SULLIVAN WI 338 PM CDT THU APR 9 2015

WIZ046-047-051-052-056>060-062>072-102045MARQUETTE-GREEN LAKE-FOND DU LAC-SHEBOYGAN-SAUK-COLUMBIA-DODGEWASHINGTON-OZAUKEE-IOWA-DANE-JEFFERSON-WAUKESHA-MILWAUKEELAFAYETTE-GREEN-ROCK-WALWORTH-RACINE-KENOSHA338 PM CDT THU APR 9 2015

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF EAST CENTRAL WISCONSIN...SOUTH CENTRAL WISCONSIN AND SOUTHEAST WISCONSIN.

.DAY ONE...TONIGHT

A TORNADO WATCH IS IN EFFECT FOR PORTIONS OF SOUTH CENTRAL AND SOUTHEAST WISCONSIN THROUGH 11PM. LARGE HAIL...DAMAGING WINDS AND TORNADOES ARE ALL POSSIBLE.

.DAYS TWO THROUGH SEVEN...FRIDAY THROUGH THURSDAY

THERE IS A CHANCE OF THUNDERSTORMS SUNDAY EVENING.

.SPOTTER INFORMATION STATEMENT...

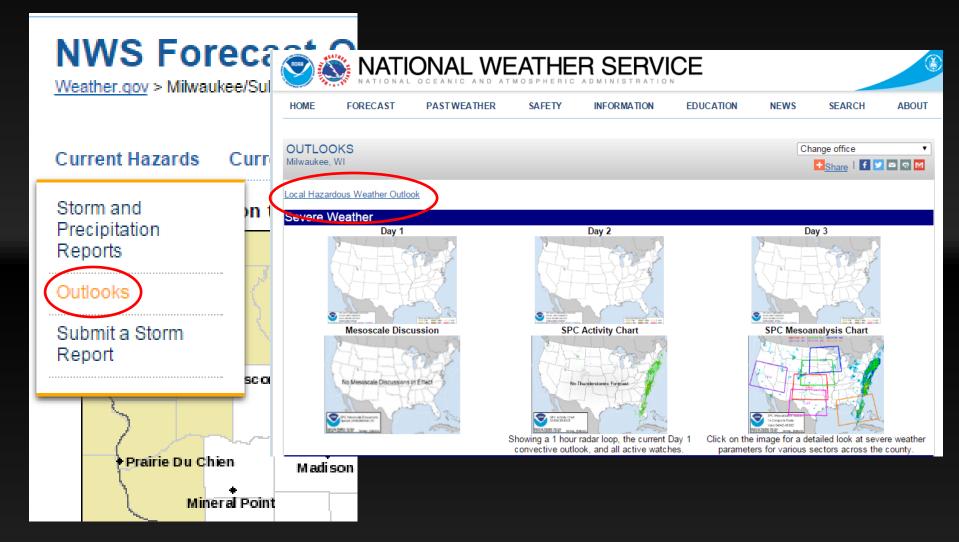
SPOTTER ACTIVATION IS NEEDED THIS AFTERNOON AND EVENING.





Hazardous Weather Outlook

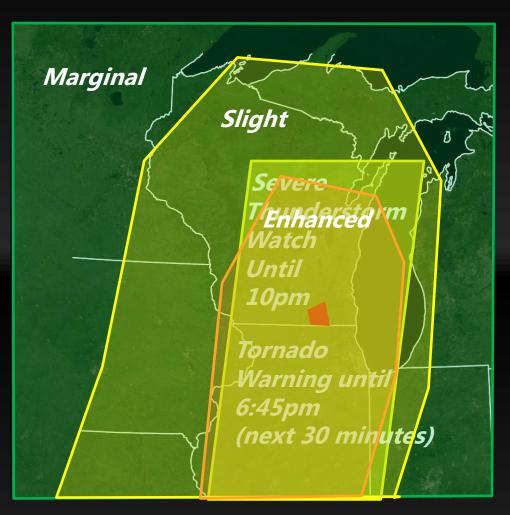
via NWS Milwaukee







Severe Weather Forecasts



Outlook

- -Several days in advance.
- -Graphical & Text.

Watch

- -2-6 Hours in advance.
- -Conditions becoming likely.

Warning

- -10-60 min in advance.
- -Storm/county size.





Wireless Emergency Alerts



- Tornado Warnings
- Flash Flood Warnings
- Future:
 - High End Severe?

Potential Changes

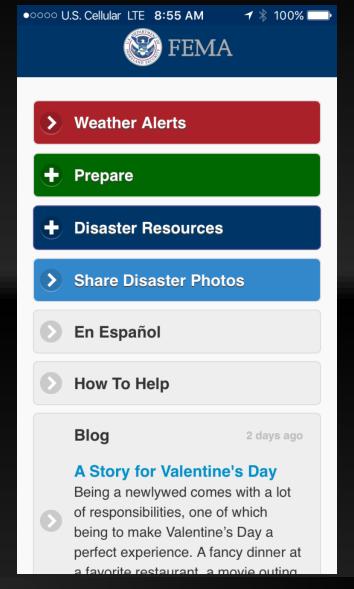
- Expanding character limit
- Maps/geo-targeting
- Testing





FEMA App











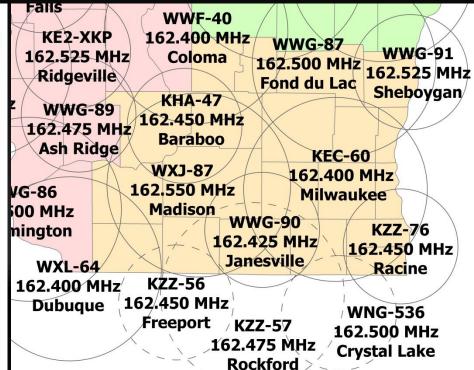
NOAA Weather Radio



All-Hazards / NOAA Weather Radio Transmitter Locations



Data provided by the Wisconsin Ed	ucational Communica	tions Board	Free	uency	Channe
/	100		162.4	00 MHz	1
KIG-64	المنافقة المنافقة	\	162.4	25 MHz	2
162.550 MHz	Jos 3000		162.4	50 MHz	3
Duluth	KZZ-78		162.4	75 MHz	4
Dalatii	162.525 MHz	1		00 MHz	5
	Ashland	WNG-683		25 MHz	6
		162.550 MHz		50 MHz	7
/		Marenisco	162.475 MHz	50 11112	
KZZ-79	WXI	1-91	Crystal Falls	i	
WNG-678 162.475 MH		O MU-	L. Brown	7	
162.425 MHz Spooner		Falls WNG-565		/	1
Pine City	WNG-577	162.400 M			1
	162,550 MHz	Rhineland		G-553	\
	Ladysmith			00 MHz	
7.1	Ladysmith	16		saukee	
			Crandon	W	(N-69
KEC-65 WXJ-88			1	162.4	25 MH
62.550 MHz 162.400 MHz		WXJ-89			er Bay
Minneapolis Menomonie	162.425 MH	z 162.475 MHz	KC2-XBZ		3
	Withee	Wausau 16	52.500 MHz	1	7
KJY-80	X		Gresham	1	7
162.450 MHz	WNG-564		NG-552 KIG-	65	
Red Wing	162.500 MHz	162	.525 MHz 162.550	SHM C	
	Black River	Nov	v London Green	Bay	
KGG-9		WWF-40	V Edildon		/
WXK-41 162.425	VED VVD		$ A \setminus A$		/
162.475 MHz Winor	162.525 M	7	WWG-87	WG-91	
Rochester			162.500 MHz 16	2.525 M	
LXW.	86 Ridgeville			neboyga	
162.550	MHz WWG-89	KHA-47	X 31	leboyga	7
La Cro			* *		0
Dashed circles	Ash Ridg			1	
	ASII Itiug	WXJ-87	KEC-60	4	
ndicate transmitters oustide of Wisconsin	WWG-86	162,550 MHz	162.400 MHz	2	
		Madison	Milwaukee	1	
	162.500 MHz	Wadison	WG-90 V7	Z-76	/
	Bloomington	162.		50 MHz	_\
Duluth Office	WXL-64	Jai	andvilla /-	cine	4)
Minneapolis Office		z KZZ-56	No.	icine	/
Will life apolls Office	Dubuque	162,450 MHz		\	
Sullivan Office	Dubuque	1	ZZ-57 162.50		
Sullivan Onice			102.50		
Green Bay Office			ckford Crysta	I Lake	
Green bay Office		, K0	CKIOPU / /		





_		
	Frequency	Channel
ı	162.400 MHz	1
	162.425 MHz	2
ı	162.450 MHz	3
	162.475 MHz	4
	162.500 MHz	5
	162.525 MHz	6
	162.550 MHz	7





Outdoor Warning Sirens



- Meant as an alert for people that are outdoors.
- Not intended to wake you up.
 - A/C, Windows closed
- Why they are sounded varies by jurisdiction, check with local community.





Impact Based Warnings

All tornadoes are dangerous, but not all tornadoes are created equal!



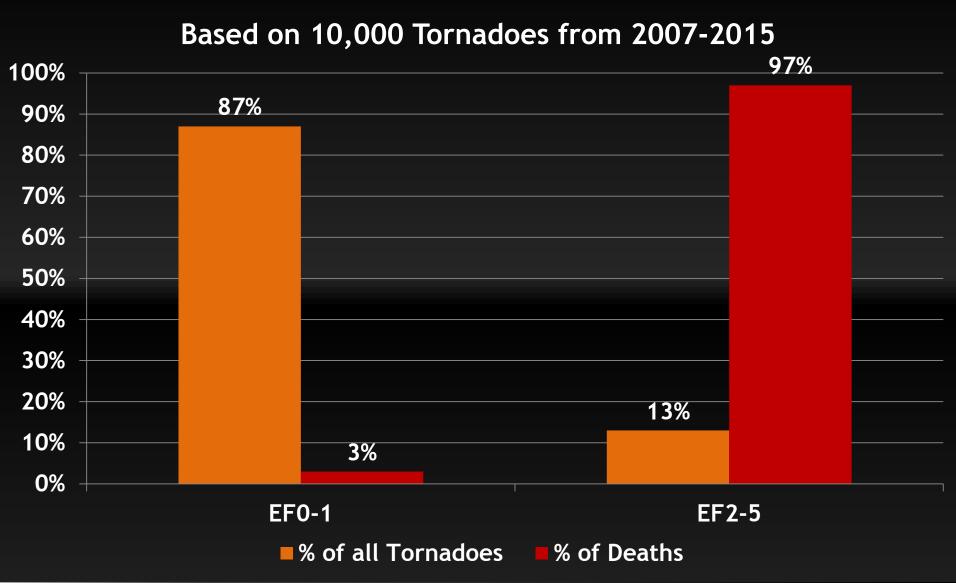


To help pick out the most dangerous Tornado Warnings, look the tags at the bottom of warnings.





Do these tornadoes deserve the same warning?





Impact Based Warnings

Tornado Warning			
Base			
Considerable			
Catastrophic			

Severe Thunderstorm Warning				
Hail	Wind	Tornado		
1" - 1.25"	60 mph	Possible		
1.5" - 2.5"	70 mph			
Giant Hail; > 2.5"	80-90 mph			
	100 mph			





Tornado Warning

Base

Considerable

Catastrophic



- Used the vast majority of the time.
- Used when tornado damage is possible.
- Tornado duration is expected to be short-lived.

TORNADO...RADAR INDICATED or OBSERVED

Impact Statement

Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed. Damage to roofs, windows and vehicles will occur. Tree damage is likely.





Tornado Warning

Base

Considerable

Catastrophic

Tornado Warning National Weather Service Milwaukee/Sullivan WI 330 PM CST February 27 2017

The National Weather Service in Milwaukee/Sullivan has issued a

- * Tornado Warning for...
 Western Jefferson County in southeastern Wisconsin
- * Until 400 PM CST
- * At 330 PM CST...a severe thunderstorm capable of producing a tornado was located near Johnson Creek, moving east at 15 mph.

HAZARD...Tornado

SOURCE... Radar indicated rotation.

IMPACT...Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed.

Damage to roofs, windows, and vehicles will occur. Tree damage is likely.

* This tornadic thunderstorm will be near...
Sullivan around 345 PM CST.

PRECAUTIONARY/PREPAREDNESS MEASURES TAKE COVER NOW!.....

& &

LAT...LON XXXX XXXX XXXX XXXX TIME...MOT...LOC... XXXXZ XXXDEG 15KT XXXX XXXX

TORNADO...RADAR INDICATED (or OBSERVED)

TORNADO DAMAGE THREAT...

HAIL..."SIZE"IN





Tornado Warning

Base

Considerable

Catastrophic



- Used rarely.
- Used when radar or other observational evidence shows a tornado is occurring.
- Used when tornado is capable of producing considerable damage

Impact Statement

You are in a life threatening situation. Flying debris may be deadly to those caught without shelter. Mobile homes will be destroyed. Considerable damage to homes, businesses and vehicles is likely and complete destruction is possible.





Tornado Warning

Base

Considerable

Catastrophic

Tornado Warning
National Weather Service Milwaukee/Sullivan
340 PM CST Feb 27 2017

The National Weather Service in Milwaukee/Sullivan has issued a

- * Tornado Warning for... Eastern Jefferson County in southeastern Wisconsin
- * Until 430 PM CST
- * At 340 PM CST...a confirmed large and extremely dangerous tornado was located near Jefferson, moving east at 15mph.

This is a PARTICULARLY DANGEROUS SITUATION. TAKE COVER NOW!

HAZARD...Damaging tornado.

SOURCE...Weather spotters confirmed tornado.

IMPACT...You are in a life-threatening situation. Flying debris may be deadly to those caught without shelter. Mobile homes will be destroyed. Considerable damage to homes, businesses, and vehicles is likely and complete destruction is possible.

* This tornadic thunderstorms will be near...

Dousman around 355 PM CST.

TORNADO...OBSERVED TORNADO DAMAGE THREAT...CONSIDERABLE HAIL..."SIZE" WIND..."SPEED"





Tornado Warning

Base

Considerable

Catastrophic



- Used exceedingly rarely.
- Direct observational evidence that a violent tornado is striking or about to strike a population footprint.

Impact Statement

You are in a life threatening situation. Flying debris may be deadly to those caught without shelter. Mobile homes will be destroyed. Considerable damage to homes, businesses and vehicles is likely and complete destruction is possible.





Tornado Warning

Base

Considerable

Catastrophic

Tornado Warning National Weather Service Milwaukee/Sullivan 345 PM CST Feb 28 2017

... TORNADO EMERGENCY FOR SULLIVAN...

The National Weather Service in Milwaukee/Sullivan has issued a

- * Tornado Warning for...
 Eastern Jefferson County in southeastern Wisconsin
- * Until 415 PM CST
- * Aa 345 PM CST...a confirmed large, and destructive tornado was observed near Jefferson, moving east at 15 mph.

TORNADO EMERGENCY for Sullivan. This is a PARTICULARLY DANGEROUS SITUATION. TAKE COVER NOW!

HAZARD...Deadly tornado.

SOURCE...Weather spotters confirmed tornado.

IMPACT...You are in a life-threatening situation. Flying debris may be deadly to those caught without shelter. Mobile homes will be destroyed. Considerable damage to homes, businesses, and vehicles is likely and complete destruction is possible.

* This tornadic thunderstorm will be near... Sullivan around 400 PM CST.

PRECAUTIONARY/PREPAREDNESS MEASURES
TAKE COVER NOW!.....

TORNADO...OBSERVED

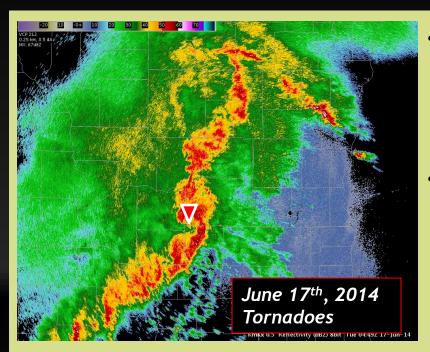
TORNADO DAMAGE THREAT...CATASTROPHIC HAIL..."SIZE"IN





Severe Thunderstorm Warning

Tornado Possible



- A severe thunderstorm has some potential for producing a tornado.
- Forecaster
 confidence is not
 high enough to
 issue a Tornado
 Warning.

Impact Statement

Intense thunderstorms lines can produce brief tornadoes and widespread significant wind damage. Although a tornado is not immediately likely, it is best to move to an interior room on the lowest floor of a building. These storms may cause serious injury and significant property damage.





Severe Thunderstorm Warning

Tornado Possible

Severe Thunderstorm Warning National Weather Service Milwaukee/Sullivan 330 PM CST Mon Feb 27 2017

The National Weather Service in Milwaukee/Sullivan has issued a

- * Severe Thunderstorm Warning for...
 Western Jefferson County in southeastern Wisconsin
- Until 415 PM CST
- At 330 PM CST, severe thunderstorms were located along a line extending from Waterloo to near Milton, moving east at 35mph.

HAZARD...70 mph wind gusts and guarter sized hail.

SOURCE... Radar indicated.

IMPACT...Hail damage to vehicles is expected. Expect wind damage to roofs, siding, and trees.

* Locations impacted include...Jefferson, Sullivan...

PRECAUTIONARY/PREPAREDNESS MEASURES

Intense thunderstorms lines can produce brief tornadoes and widespread significant wind damage. Although a tornado is not immediately likely, it is best to move to an interior room on the lowest floor of a building. These storms may cause serious injury and significant property damage.

23

LAT...LON XXXX XXXX XXXX XXXX
TIME...MOT...LOC... XXXXZ XXXDEG 15KT XXXX XXXX

TORNADO...POSSIBLE

TORNADO DAMAGE THREAT...
HAIL..."SIZE"IN
WIND..."SPEED"MPH



Wisconsin Statewide Tornado Drill

Thursday, April 20th, 2017

- A test Tornado Watch will be issued at 1pm.
- A test Tornado Warning will be issued at 1:45pm.
- The test Watch and Warning will be cancelled at 2pm.
 - A test Tornado Warning will be issued at 6:45pm.

Many Wisconsin radio and TV stations will participate in the drill. NOAA Weather Radio All Hazards will also issue alert messaging.

Wireless Emergency
Alerts will not tone, but
local municipalities will
likely test outdoor
warning sirens.

Please reserve this time to practice your own tornado and severe weather safety plans.



Damaging Winds Safety

- Most frequent type of severe weather.
- Falling trees/limbs/light weight objects.
- SEVERE= speeds of 58mph or higher.









Damaging Winds Safety

- Tents and campers are not safe places.
- Strong winds can come before rain starts w/thunderstorms.
- Know where shelter is.







National Weather Service Milwaukee/Sullivan

Damaging Winds Safety



30-40 mph

Whole Trees in Motion



40-50 mph

Twigs or small branches breaking



50-58 mph

Branches/Small Limbs breaking



58-75 mph

- Threshold of visible structural damage
- Large branches broken



Over 75 mph

- Loss of roofing materials/roof
- Trees uprooted/trunks snapped





Flash Flood Safety

- Common Thunderstorm Killer.
- Heavy Thunderstorm Rains.
- Repeat Thunderstorms.
- Wet, Saturated Soils.

Flash flood damage from nearly 9 inches of rain overnight July 11/12, 2016 along HWY 13 in Ashland Co. near Highbridge,

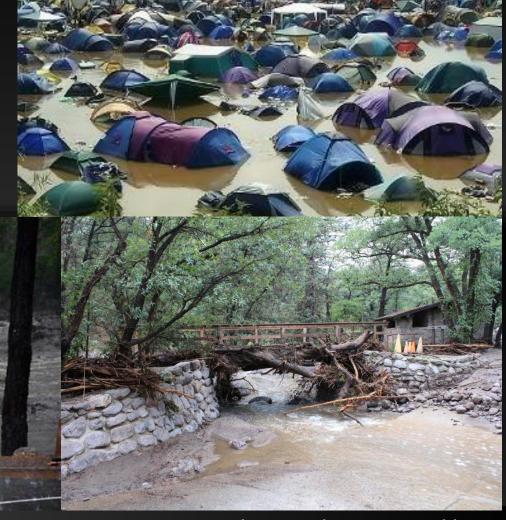
Quicker impact in steep terrain and urban areas.





Flash Flood Safety

- Rivers can quickly rise.
- Storms may not be at your location.
- Get to higher ground.
- Don't drive through flooded roadways.







Flash Flood Safety

WHEN
FLOODED
TURN AROUND
DON'T
DROWN

- Be especially cautious at night!
- 2 feet of water can float vehicles.





Lightning Safety

Giant spark of electricity in the atmosphere.









U.S. Lightning Fatalities 2006-2016





n-277 **n**-75

For more information:

http://www.lightningsafety.noaa.gov/victims.htm

Lightning Safety

Minocqua man hit by lightning in critical condition

Recommend 0

Share



Posted: Sep 07, 2016 11:38 AM CDT

MINOCQUA (WQOW) - A 66-year-old Minocqua man was rushed to a hospital early Tuesday after being struck by lightning as walked his dog outside his home, police said.

The man was identified as Bryan Jennings, a supervisor with the Town of Minocqua Board. He was hit by lightning around 6:30 a.m. on Tuesday as he walked his dog outside his home at Tanglewood Court.

"He was unresponsive when the medics arrived," Sqt. David Geiss said.

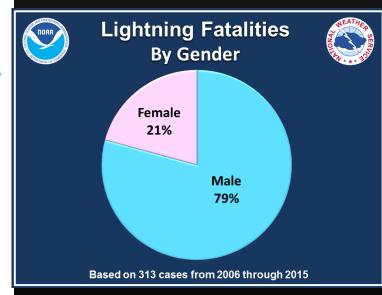
The lightning strike happened within 15 feet of his Tanglewood Court home as a thunderstorm with heavy lightning and rain rumbled through the area, lasting 90 minutes, Geiss said.

Jennings was taken to Howard Young Medical Center but his condition was not immediately known Tuesday afternoon.

His five-month-old dog was not hurt, Geiss said.

The storm dropped from up to 3 inches of rain in parts of the Northwoods, including more than an inch in Minocqua.

On Wednesday, he was hospitalized in critical condition at a Madison burn center, said a University Hospital spokeswoman.







Most Common Activities: Lightning Deaths







How can I stay safe?

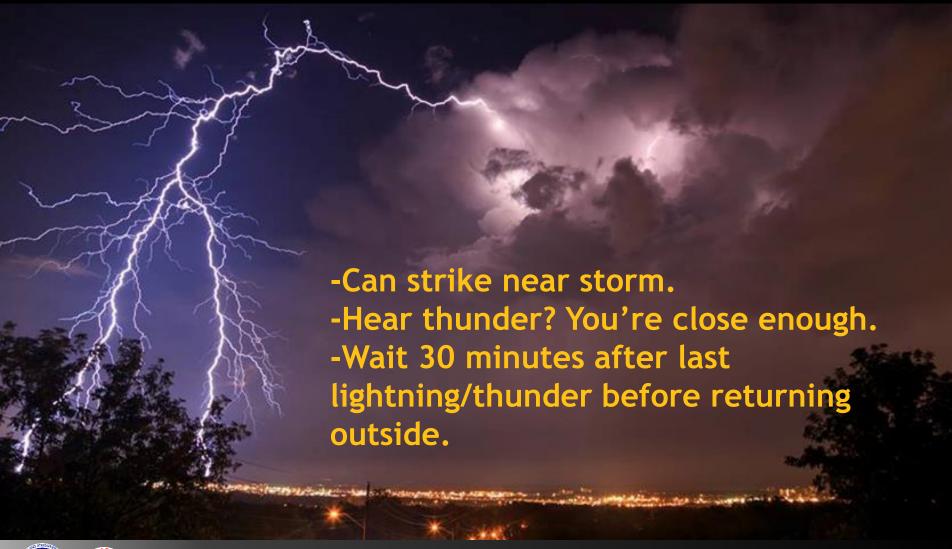








If the sky looks threatening, head to a safe shelter.





Hail Safety

- Hail is considered severe at 1" diameter.
- Large hail can coincide with tornado activity.
- Report a size or compare to common objects.



















Hail Safety















Hail Safety



Pea = 1/4"



Penny = 3/4"



Nickel = 7/8"



Quarter = 1"



Half Dollar=11/4"



Walnut = 1½"



Golf Ball=1¾"



Egg = 2"



Pool Ball=21/4"



Tennis Ball=2½"



Baseball=23/4"



Grapefruit=4"



Softball = 4½"





Summary

- Severe weather occurs in Wisconsin EVERY year.
- Being prepared for when severe weather occurs is important.
- Flash flooding, lightning and damaging winds can cause fatalities and injuries.
- Have multiple ways to receive severe weather information!



Thank You!

